



# Impact of Continued Planned Education Provided by Clinical Nurses on Patients with Chronic Heart Failure

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Received 2021 March 20; Revised 2021 November 06; Accepted 2021 November 28.

## Abstract

**Background:** Patient education is essential for all patients, and nurses should be competent in patient education.

**Objectives:** This study aimed to investigate the effect of training patients on their self-care capabilities, heart failure health behaviors, and satisfaction levels.

**Methods:** This study was conducted based on a quasi-experimental research method with a pretest-posttest design. The two study groups included individuals with heart failure and their nurses and a total of eight nurses working in the cardiology clinic and 31 patients. The nurses were trained on the program "Planned patient education" in three sessions and two meetings. Following the completion of this process, the nurses started their patient education (PE) in line with their training. The data on nurses were collected in pre-and post-training processes, and patients' data were collected in three stages, including pre-education, discharge, and three months after education.

**Results:** The mean±SD score of Heart Failure Health Behavior Scale (HFHBS) in patients in the pre-and post-education period and three months after education were obtained at 47.54±11.98, 63.12±11.12, and 66.90±10.44, respectively, indicating a statistically significant difference between the groups. The mean score of the "Self-Care Maintenance" subcategory was estimated at 32.14±15.88, 51.17±17.60, and 53.43±18.14 in pre-and post-education period, and three months after education, respectively. The mean score of the "Self-Care Management" subcategory was obtained at 44.83±21.31, 53.87±19.22, and 8.38±26.18 in pre-and post-education period, and three months after education, respectively. The mean score of the "Self-confidence in Self Care" subcategory was obtained at 32.46±22.74, 48.78±25.78, and 45.91±30.65 in pre-and post-education period and three months after education, respectively. Patients were satisfied with the efficiency of the subjects covered (75.8%), nurses making short, understandable, and explicit sentences (87.9%), the usefulness of the topics covered (93.9%), and nurses' knowledge (84.8%).

**Conclusion:** Based on the obtained results, PE enhanced the health behavior of people with chronic heart failure and improved patients' self-care behaviors. The PE led to an increase in patient's satisfaction.

**Keywords:** Health behaviors, Heart failure, Patient education, Patient satisfaction, Self-care

## 1. Background

Patient education (PE) is a process that aims to support the self-dependence capacity of patients to fulfil their needs. It involves patients and their relatives, nurses, and other health professionals from the time of patients' admission to their discharge (1). The PE is important for both patients and nurses since it is considered to be nurses' basic role to which they have legal responsibility. However, the current study shows an inadequate performance of nurses in PE (2-7). Vafae-Najar et al. determined that 42% of the patients received PE; however, these patients were dissatisfied with the duration and context of the education (4). Based on the study conducted by Edwardson et al., clinic nurses did not provide planned PE (6); however, Abdi et al. showed that PE was provided at low levels (7). The review of the literature revealed that PE can lead to decreased patient anxiety, increased satisfaction, autonomy, enhanced self-care (7), increased quality of life (8,9), and adaptation to disease, as well as decreased hospital expenses, morbidity, and mortality (9). Based on the evidence, planned

PE provides continuity of home care after discharge from the hospital and helps lower the incidence of hospital infections (10). Furthermore, PE was considered to have positive effects between 50 and 80 percent on disease management (11).

Chronic Heart Failure (CHF) is a clinical condition in which the heart structure or function is abnormal, and the patients have such signs and symptoms as dyspnoea, fatigue, liquid retention, and shortened life span (12). Important services provided by nurses lead to the decreased morbidity and mortality rates and improved patients' quality of life and satisfaction in CHF patients, related to country populations. In the other words, CHF patients' education by nurses is perceived to be highly satisfactory for the patients due to improvement in quality of life through symptom control (13). To the best of our knowledge, only two studies have evaluated the results of PE on CHF patients (14). In these two studies, PE was only provided by researchers without any education in clinical routines. However, PE must be provided by nurses who continuously monitor and treat patients in the clinic. Therefore, this study aimed to evaluate the effect of PE on health behaviours, self-care

ability, and level of satisfaction in CHF patients, for the first time.

## 2. Objectives

This study aimed to investigate the effect of training patients on their self-care capabilities, heart failure health behaviors, and satisfaction levels.

## 3. Methods

This study was conducted based on a quasi-experimental research method with a pretest-posttest design in the cardiology clinic of a state hospital in Erzurum, Turkey, from June 2015 to February 2018.

The first stage of the study included eight nurses working in cardiology clinics from August 2016 to 2017. Sample selection was not made and the whole university was included in the study. The second stage of the study included all CHF patients in the cardiology clinic from August 2016 to 2017 with a sample comprised of 31 CHF patients in the cardiology clinic selected based on the research criteria.

### 3.1. Data Collection

#### 3.1.1. Data Collection Tools Used in the First Stage of the Study

Nurse identification and PE evaluation form were prepared based on similar studies (2) and consisted of information on nurses' socio-demographic characteristics, including age, gender, and education status (1) with items to determine nurses' status (i.e. the manner of data collection, determination of time and place for education, and recording of education). Afterward, nurses evaluated their PE practices.

#### 3.1.2. Data Collection Tools Used in the Second Stage of the Study

The patient identification form comprised of items on patients' socio-demographic characteristics.

#### 3.1.3. Heart Failure Health Behavior Scale (HFHBS)

This scale was developed by Enç in 1998 to monitor CHF patients' health behavior (15). The minimum and maximum total scores of the scale are 24 and 96, respectively. Based on a structured evaluation, the lower and higher scores indicate inadequate and adequate health behavior of CHF patients, respectively.

#### 3.1.4. Self-Care of Heart Failure Index

Self-Care of Heart Failure Index was developed by Riegel, Carlson, and Glaser to evaluate the self-care of CHF patients (16), and each subcategory of this index was calculated separately. The "Self-Care Maintenance", "Self-Care Management" and the "Self-Confidence in Self-Care subcategories" can be

scored 10-40, 6-24, and 6-24 points, respectively.

Moreover, "Patients' Satisfaction Level Evaluation Form" was prepared by researchers (2,9), and involved information on the content, duration, and environment of the PE.

### 3.2. Nursing Initiative

#### 3.2.1. The first stage of the study

##### 3.2.1.1. Nurse Education

All nurses were admitted to the "Planned Patient Education" plan. The content of education plan was provided by professionals of the subject and covered in three sessions. These sessions provided education to prepare CHF patients for PE both cognitively and emotionally. After three sessions, two meetings were held to prepare nurses before PE.

##### 3.2.1.2. Preparation of materials used in PE:

Educational materials were prepared by the nurses during the meetings and materials for PE involved 10 brochures appealing to different needs of the patient, 22 posters, 5 slides, 10 videos, as well as one Patient Education Leaflet prepared by researchers and nurses, based on a literature review (14,17). Understandability of these materials was tested by one cardiology specialist physician, one cardiology nurse, one CHF patient, and one CHF patient relative and were prepared to be used after necessary corrections, according to the provided suggestions.

##### 3.2.1.3. Preparation of education room:

A room was prepared in the cardiology clinic and was dedicated to PE program. Physical conditions affecting education activity (e.g., heat, light, and noise) were adjusted as well. Portfolio files were prepared for each patient to evaluate the nurse's PE.

### 3.3. Second Stage of the Study

Required forms were filled out in a face-to-face interview before the initiation of education sessions. The PE started according to Patient Education Guide. Additionally, the Patient Education Guide was used to meet the personal education and training needs. PE sessions were performed interactively by nurses in the PE room and continued from the time of patients' admission to the clinic to their discharge from the hospital. Subject and duration of the education were determined by the nurses, according to the patient's educational needs, and the education duration was at least 15 min. Didactic expression, questions and answers, sample case discussions, scenarios, and demonstration methods were used during the education. Information regarding the patients' education was recorded in the patient's portfolio file. After discharge, the patients who received education were tested to evaluate the nurse's PE and required forms were then filled out. Besides, based on the

suggestions to continue assessments and behavior control, required forms were also filled out again via telephone interview three months after discharge.

### 3.4. Evaluation of the Data

The data were analyzed using SPSS software (Version 18). Descriptive statistics were presented as mean±SD and percentage. Normality distribution of numerical variables was evaluated using Skewness and Kurtosis, and parametric tests were used in the analysis of data with a normal distribution (between-2and+2). A one-way ANOVA test was used to compare three or more normally distributed groups, and post hoc test (Tukey HSD test) was used to compare the groups and detect differences. A p-value less than 0.05 (P<0.05) was considered statistically significant.

### 3.5. Ethical principles of the study

The study protocol was approved by the Erzurum Atatürk University Faculty of Health Sciences Ethical Committee, Yakutiye/Erzurum, Turkey (2016/04/04). Written permission was obtained from the cardiology clinic and verbal consent was also obtained from nurses, patients, and patient relatives on their willingness to participate in this study.

### 3.6. Limitations of the study

Regarding the limitations of this study, one can refer to the fact that PEs were only provided to CHF patients who met research criteria and did not include all patients who received treatment from nurses in the cardiology clinic.

## 4. Results

The mean age of nurses in this study was 31.18±23.79, and the majority (87.5%) of them were female. Moreover, planned PE in routine was provided to only 37.5% of them before the study.

In the study, the mean±SD age of the patients was determined at 65.51±10.41. Results revealed that 51.6% of the patients were female; 61.3% were married; 45.2% were literate; 22.6% were smokers and 32.3% were followed their diet. Furthermore, 12.9% of the patients had received PE before and 67.7% had also another disease in

**Table 1.** Characteristics of Patients (n=31)

Characteristics of Patients	N	%
<b>Age (65.51±10.41)</b>		
<b>Gender</b>		
Female	16	51.6z
Male	15	48.4
<b>Marital Status</b>		
Married	19	61.3
Single	12	38.7
<b>Educational level</b>		
Literate	14	45.2
Primary school	13	41.9
High school	4	12.9
<b>Smoking status</b>	7	22.6
<b>Following their diet</b>	10	32.3
<b>Previous PE status</b>	4	12.9
<b>Another chronic disease besides CHF</b>	21	67.7

addition to CHF (Table 1).

The mean scores of HFHBS in patients were determined at 47.54±11.98, 63.12±11.12, and 63.12±11.12 at pre- and post-education and three months after education, respectively, indicating a statistically significant difference between the groups (P<0.05) (Table 2).

“Self-Care Maintenance” subcategory score averages were 32.14±15.88, 51.17±17.60, and 53.43±18.14 before and after education, and three months after education, respectively, with the statistically significant difference between the groups (P<0.001). The mean of the “Self-Care Management” subcategory score was 44.83±21.31 before education, 53.87±19.22 after education, and 8.38±26.18 three months after education, indicating no statistically significant difference between the groups (P>0.05).

Moreover, the mean score of the “Self-Confidence in Self-Care” subcategory was 32.46±22.74, 48.78±25.78, and 45.91±30.65 pre- and post-education and three months after education, respectively, indicating a statistically significant difference (P<0.05) (Table 3).

**Table 2.** Comparison of mean±SD scores of Heart Failure Health Behavior in patients (n=31)

	HFHBS ± SD	F	P-value
<b>Pre-test</b>	47.54±11.98		
<b>Post-test</b>	63.12±11.12	26.005	<0.001*
<b>3 months after education</b>	66.90±10.44		

\*One-way ANOVA and Tukey HSD test results were significantly higher three months after education than in Pre-test

**Table 3.** Comparison of mean±SD scores of Patient's Heart Failure Self Care Index Subscale (n=31)

Self-Care Index Subscale		X ± SS	F	P-value
Self-Care Maintenance	Pre-test	32.14±15.88		
	Post-test	51.17±17.60	14.267	<0.001*
	3 months after education	53.43±18.14		
Self-Care Management	Pre-test	44.83±21.31		
	Post-test	53.87±19.22	2.932	0.058
	3 months after education	58.38±26.18		
Self confidence in Self Care	Pre-test	32.46±22.74		
	Post-test	48.78±25.78	3.327	0.040*
	3months after education	45.91±30.65		

\*One-way ANOVA and Tukey HSD test results were significantly higher three months after education than in Pre-test

**Table 4.** Patient satisfaction levels after education (n=31)

	Very satisfied		Satisfied		Partial satisfied		Not satisfied	
	n	%	n	%	n	%	n	%
Efficiency of the subjects	25	75.8	6	18.2	2	6.0	-	-
Short, understandable, and explicit sentences	29	87.9	4	12.1	-	-	-	-
Usefulness of the topics	31	93.9	2	6.1	-	-	-	-
Nurse's knowledge	28	84.8	5	15.2	-	-	-	-
Allowing the nurse to ask questions	29	87.9	4	12.1	-	-	-	-
Understandability of the materials used	26	78.8	6	18.2	-	-	-	-
Physical conditions of the education room	26	78.8	4	12.1	3	9.1	-	-

Patients were very satisfied with the efficiency of the subjects covered (75.8%), nurses' making short, understandable, and explicit sentences (87.9%), the usefulness of the topics covered (93.9%), nurses' knowledge (84.8%) and allowing the nurse to ask questions (87.9%). Besides, 78.8% of the patients were very satisfied with understandability of physical conditions of the education room (Table 4).

## 5. Discussion

Based on the literature, PE was conducted by low-level (2, 3, 5, 7) nurses without any proper education (3), and patients failed to feel pleased with the duration and education context (4). Moreover, most of the nurses neither provided PE to patients nor were aware of its importance (5). The reason for the lack of adequate planned and regular PE can be explained by the shortage of trained nurses and the fact that nurses could not use time efficiently or spend more time on other nursing activities.

The study conducted by Akdeniz and Özer (14) revealed that education provided to CHF patients positively affected health behaviors and decreased CHF-related symptoms. Another study revealed that nurses' education on medication and diet concordance, exercise, vaccination, travel, and general advice improved the quality of life and health behavior in CHF patients (18). In this study, increased health behavior of patients after education can be related to planned and regular education provided by nurses during the patient's hospitalization period.

Strömberg et al. (18) found that education can positively affect patient's self-care ability. In this study, the ratio of patients who previously received education was very low (12.1%) and the patients had inadequate knowledge of their disease. Other studies also demonstrated that the provision of PE to CHF patients increased their knowledge level which was important in patients' self-care maintenance (19). In this study, the mean score of "Self-Care Maintenance" subcategory were low which can be explained by the absence of PE for CHF patients. Personal educations of patients, as well as a correct diagnosis made by the nurses, according to education leaflets, videos, posters, and brochures,

might lead to increased mean scores after education. Accordingly, patients with higher levels of knowledge could better recognize the symptoms and adapt themselves to the administered treatment. Therefore, education was effective in the "Self-Care Maintenance" subcategory.

Based on the evidence, initiatives applied to CHF patients under the nurse's supervision improved self-care management (19). The difference among mean scores of "Self-Care Management" category in CHF patients was not statistically significant due to frequent control of patients' symptoms and tests in the hospital environment, regulation of diet and medication, and continuous surveillance provided by the health care team. Moreover, trusting in the decision and interests of the health care team members might affect the situation as well.

Mantovani et al. (20) showed that PE had positive effects on adaptation to disease and self-care behaviors and increased such behaviors as daily weight monitoring and liquid limitation. The development of a trust relationship between the nurse and the patient may be effective in improving self-care behaviors. Patients' self-confidence increased after education since the PEs were provided by the nurses who worked in the clinic and provided care and treatment to patients.

Furthermore, the results of the study conducted by Öztürk et al. (21) demonstrated that the majority of the patients were satisfied with the education received from the nurses. Moreover, some studies reported higher levels of satisfaction in educated patients (16). In this study, factors affecting patients' satisfaction levels included PE provided by clinic nurses who interacted with patients in the clinic from admission to discharge, maintenance of care, and participation in the treatment.

## 6. Conclusion

Based on the study findings, PE improved patients' heart failure health behaviors and enhanced their self-care maintenance, self-care management, and self-confidence during self-care process. Moreover, PE increased patient satisfaction. Regarding these findings, it is suggested that courses related to PE should be increased in undergraduate education, and the

educational role of the nurse should be emphasized in nursing education programs. Moreover, PE rooms should be established in each clinic and specific educational materials should be prepared for each clinic. Further studies with larger (country-wide) sample sizes are required to be performed on different chronic diseases.

This study has been extracted from a PhD research project in Atatürk University, Erzurum, in 2015.

## Acknowledgments

The authors would like to thank the individuals who participated in this study.

## Footnotes

**Conflicts of Interest:** The authors declare they do not have any conflict of interests regarding the publication of the present study.

**Funding/support:** This study did not receive any grants from any funding agency from public or nonprofit sectors.

**Ethical approval:** The study protocol was approved (2016/04/04) by the Ethical Committee of Faculty of Health Sciences in Erzurum Atatürk University, Yakutiye/Erzurum, Turkey.

**Informed consent:** The patients included in the study were informed about the purpose of the study, and an "Informed Consent" form was filled.

### Authors' contributions:

Study design: BÇ, GA

Data collection/analysis: BÇ, GA

Study supervision: BÇ, GA

Manuscript writing: BÇ, GA

Critical revisions of important intellectual content: BÇ, GA

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